

Application No. 10/019,606
Amendment Dated April 14, 2005
Reply to Office Action of October 20, 2004

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 13 (currently amended). An electrode comprising an elongate generally hollow body formed of porous relatively low electrical conductivity material, and connection means comprising an elongate electrically conductive member for being connected to a power source, the connection means extending along inside the said body and contacting the inner wall surface of the body at a plurality of spaced apart locations along the length of the body for causing the electrical current from the power source to be distributed substantially uniformly along the electrode.

Claim 14 (original). An electrode according to Claim 13, wherein the connection means is an elongate spring made from spring wire shaped so as to mechanically urge the coils into contact with the inner wall surface of the body at longitudinally spaced apart locations.

Claim 15 (currently amended). An electrode according to Claim 13; An electrode comprising an elongate generally hollow body formed of porous relatively low electrical conductivity material, and connection means comprising an elongate electrically conductive member for being connected to a power source, the connection means extending along inside the said body and contacting the inner wall surface of the body for causing the electrical current from the power

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source to be distributed substantially uniformly along the electrode, wherein the conductor connection means comprise separate conductors in contact with the inner wall surface of the body at respective longitudinally spaced apart locations.

Claim 16 (original). An electrode according to Claim 13, wherein the electrically conductive member has a conductivity at least two orders of magnitude higher than that of the body.

Claim 17 (original). An electrode according to Claim 13, wherein the electrode body is formed of a substoichiometric suboxide of titanium of the form TiO_x where x is from about 1.99 to about 1.7.

Claim 18 (original). An electrode according to any Claim 13, wherein the body is at least 200 mm long.

Claim 19 (original). An electrode according to Claim 13, wherein the electrical conductor is made of a valve metal.

Claim 20 (original). Apparatus for use in electrolytic treatment of a liquid, the apparatus comprising:

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(i) an electrochemical cell having first and second spaced electrodes, the first electrode being the form of an elongate generally hollow body made of porous relatively low electrical conductivity material; and

(ii) power supply means electrically connected to the electrodes for causing electrical current to flow between them;

the electrical connection between the power supply means and the first electrode including an elongate electrically conductive member, said member extending along inside the said hollow body and contacting the porous material of the body at a plurality of spaced apart locations along the length of the inner wall surface of the body for causing the electrical current from the power supply means to be distributed substantially uniformly along said first electrode.

Claim 21 (original). Apparatus according to Claim 20, wherein the apparatus is coupled to a source of aqueous effluent or water and the apparatus is adapted to remove pollutants therefrom.

Claim 22 (currently amended). Apparatus according to Claim 20, wherein the power source is operable to supply current to the electrode at a density of above $10 \text{ A} \cdot \text{m}^2 \text{ A/m}^2$ of external area and wherein the voltage variation between any two points on the electrode is less than 200 mV.

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Claim 23 (currently amended). An in-situ soil remediation system incorporating an electrode, the electrode comprising an elongate generally hollow body formed of porous relatively low electrical conductivity material, and connection means comprising an elongate electrically conductive member for being connected to a power source, the connection means extending along inside the said body and contacting the inner wall surface of the body for causing the electrical current from the power source to be distributed substantially uniformly along the electrode.

Claim 24 (original). Apparatus for performing a redox type reaction, incorporating an electrode according to Claim 13.

Claim 25 (new) An in-situ soil remediation system comprising:

- (i) an elongate hollow electrode made of titanium oxide (TiO_x) and having inner and outer surfaces;
- (ii) an electrical voltage source; and
- (iii) connection means connected between said source and one of said surfaces for electrical current to flow from said source to said one of said surfaces and through the body of the electrode to the other of said surfaces;

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 said connection means comprising a plurality of electrically conductive portions distributed along the length of the electrode for causing said current flowing through said electrode body to be substantially evenly distributed along the length of the electrode.

26 (new). An electrode comprising:

- (i) a porous elongate hollow body made of titanium oxide (TiO_x) and having inner and outer surfaces; and
- (ii) connection means for being connected to an electrical voltage source and connected to one of said surfaces for electrical current to flow from said source to said one of said surfaces and through the body of the electrode to the other of said surfaces;

 said connection means comprising a plurality of electrically conductive portions distributed along the length of the electrode for causing said current flowing through said electrical body to be substantially evenly distributed along the length of the electrode.

27 (new). An electrode comprising an elongate generally hollow body formed of low electrical conductivity material and having an electrical resistance along the body of 280 milli-Ohms or more, and an electrical conductor in the form of an elongate spring means comprising interconnected portions made of spring material, said spring means being located inside said body for said portions to be urged by spring action into contact with the inner wall surface of the

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body at respective spaced apart locations along the length of the body, the electrical conductor being operable for being connected to a power source and for causing a resulting electrical current in the electrode to be distributed substantially uniformly along the electrode.

28 (new). An electrode according to Claim 27, wherein the electrode material has a resistivity of at least 20 milli-Ohms/centimeter.